THURSDAY, AUGUST 24, 1882

TEXT-BOOKS OF ANATOMY

Handbuch der Vergleichenden Anatomie. Leitfaden bei Zoologischen und Zootomischen Vorlesungen. By Prof. E. Oscar Schmidt. Eighth edition, pp. 327. (Jena, 1882.)

Lehrbuch der Vergleichenden Anatomie der Wirbelthiere auf Grundlage der Entwickelungsgeschichte. By Prof. Rt. Wiedersheim. First part, pp. 476. (Jena, 1882.)

IT is now thirty-three years ago since Oscar Schmidt, then a young Privat Docent, published the first edition of his "Handbook of Comparative Anatomy" as a guide to his course of lectures. Successive generations of students have called for successive editions, until in the present year the author is in the enviable position of issuing the eighth edition of his Handbook, and he has added to its value by now for the first time illustrating it with upwards of 100 well executed woodcuts. It would be out of place, and indeed quite unnecessary, to enter into a detailed criticism of a work, so well known as the present, and which has obviously supplied a want felt by so many students. As regards the general motive of the book we may say that it presents an outline of the comparative anatomy both of the Invertebrata and Vertebrata, written in a clear style and methodically arranged.

He classifies animals into eight groups: Protista and Protozoa, Cœlenterata, Echinodermata, Vermes, Arthropoda, Mollusca, Tunicata, Vertebrata. This classification will scarcely commend itself to the more ardent members of that school of zoologists, which bases taxonomy on embryology; and which considers no system of classification is of value unless it expresses the path that has been taken by animals in the course of their evolution. By these zoologists Prof. Schmidt's system will without doubt be regarded as old-fashioned. But it has the merit of simplicity, and this from the student's point of view is no slight recommendation. Moreover, taxonomic systems, more especially of the Invertebrata, based on supposed phylogenic relations, are as yet mere speculations. They have their value, no doubt, as grouping together certain ascertained facts, and as suggesting new directions for investigation. But they are in the main quite hypothetical, and without such fixity of knowledge as will give them permanent value.

There is one point in the classification of the Mammalia followed by Prof. Schmidt, to which we must take very decided exception. We refer to the adoption of the placenta as a dominant character in the subdivision of the Monodelphia. Milne-Edwards, Huxley, Haeckel, and Carus have all undoubtedly attached much importance to this organ in taxonomy, but from the fuller knowledge that we now possess, both of its form in various mammals and of the mode in which it is shed during parturition it is clear that its characters are not of such primary value as to outweigh, in framing a system of classification, those furnished by the other organic systems. In placing the Prosimii (*Halbaffen*) amongst the *Deciduata*, Schmidt has committed a similar error to that into which Haeckel has also fallen. For the Lemurs, whose placentation has been carefully studied both by Alphonse Milne-Edwards in Paris and by W. Turner in Edinburgh, are unquestionably as *adeciduate* as a mare, a pig, or a whale. In the lemurs, as in these animals, the villi are diffused over the greater part of the surface of the chorion, and the sac of the allantois is relatively large. The evidence, therefore, is altogether opposed to retaining them in the position in which Schmidt has placed them amongst the deciduata. Again, he ranks the Edentata in the *Adeciduata*, but there is no uniformity in the character of the placenta in this order of mammals. In *Manis* undoubtedly it is non-deciduate and diffused; in *Orycteropus* it is broadly zonular; whilst in the Sloths it is deciduate and composed of numerous discoid lobes.

Prof. Wiedersheim's Lehrbuch differs from that of Prof. Schmidt in being limited to the comparative anatomy of the Vertebrata. It is a new candidate for public favour, and as yet only the first part has been published. In this part, after a short general introduction, the author treats in succession of the integument, skeleton, muscular, and nervous systems, including the organs of sense and electrical apparatus of the several classes of vertebrates. The modifications in the form and arrangement of the different systems are examined, therefore, rather in their anatomico-physiological than in their zoological aspects. By limiting himself to one only of the great divisions of the animal kingdom, the author has been enabled, within the compass of a volume of moderate size, to enter much more fully into the consideration of the several systems than was possible in Prof. Schmidt's treatise, and he has produced a work which, when completed, will be of service to those students who desire a fuller acquaintance with the details of vertebrate structure. For students of Human Anatomy this book will have a special interest, as the subject is treated so as to throw great light on the modifications of structure met with in other vertebrates when compared with man. The author indeed appears to have had in his mind, in planning out the work, the needs of students of medicine; and he has been desirous of giving to their anatomical training a wider and more philosophic range than it frequently possesses. The teaching of anatomy in our medical schools is unfortunately too much entrusted to men whose main object in life is the practice of surgery, and who follow anatomy for a time merely as a training for that practice. It becomes therefore in their hands a dry specialty. The varied and complex structures of the human body are regarded almost exclusively as parts which are liable to disease and injury, and which may require surgical interference, whilst the marvellous beauty of their physiological and morphological relations is ignored. When human anatomy is taught from a scientific, and not from a mechanical point of view, it becomes a medium for the exposition of the great facts and principles of development and morphology, and its value as an educational instrument is enormously increased.

We can recommend Prof. Wiedersheim's "Lehrbuch," both to students of medicine and to their anatomical teachers, as a work in which they will find a clear and concisely written description of the great facts of vertebrate structure; by the perusal of which much that may seem obscure in the construction of the human body will be illuminated, and great additional interest will be im-

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parted to their studies. The book is copiously illustrated with well executed woodcuts, most of which are original, and have been specially prepared for the purpose.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

School Museums

IN the new instructions to inspectors as to the application of the New Code to Elementary Schools, it is stated that a Museum will be required in a school in order to make a school "excellent" under the "merit" clause.

I would suggest to your readers that here is an excellent opportunity for their employing the scientific knowledge they possess in promoting the study of nature in a very simple and easy manner. Let them offer first to instruct and interest teachers and pupil teachers in some one branch of knowledge—let it be botany, geology, or entomology. Let them show the teachers how to collect and press, say a dozen plants, help them to classify and name them, both in English and Latin, and let them teach say to the First Standard, what they know on the subject, making the children bring each plant after it has been shown. Even in town schools there will be some country friend who could send up two or three specimens every week in the spring and summer.

I would suggest that the discarded child school books will make herbaria, and convenient books for catalogues of specimens.

For a geological museum a small cupboard with, say in this neighbourhood, seven shelves, would hold two specimens from each of our prominent strata, Lower, Middle, and Upper Lias, the Midford, or as Mr. Witchell, of Stroud, wants to call them, the Cotteswold Sands, the Inferior Oolite, Fuller's Earth, and Great Oolite, all of which can be seen from this parish if the two higher beds are not actually in it. On the inside of the cupboard doors might be put, boldly coloured, sections of the strata. Geologists might greatly help in seeing that the names of the strata and specimens were correctly given and pronounced, and a catalogue written out. And if prizes were given to promote even the most elementary knowledge in teachers and scholars, much would be done to make "science subjects" interesting and useful.

I would suggest that natural history societies and field clubs should take this in hand in their own neighbourhoods, and by the expenditure of a very small sum of money start a natural history museum in every school. A. SHAW PAGE

Selsley Vicarage, Gloucestershire, August 17

Two Kinds of Stamens with Different Functions in the same Flower

IN NATURE, vol. xxiv. p. 307 is a very interesting letter on this subject, in which while the functions performed by the two kinds of stamens are very clearly indicated, the *modus operandi* of fertilisation, it appears to me, is less clearly expressed. I have witnessed in many instances the visitation by various species of large Hymenoptera, such as *Xylocopa* and *Bombus*, of species especially of the genus *Melastoma*, possessing stamens in all points corresponding to that occurring in the *Heeria* described in the letter referred to and what takes place seems to be as follows. The large bees evidently make for the yellow platform offered by the short stamens, perhaps because they do not perceive the pistil and long stamens owing to their projection against the broad petaled corolla of the same colour in the background, and invariably receive the pistil between their legs, their feet settling on the fork of the connective, the instant effect of which is to collect the whole of the long stamens into a bunch, and to depress their anthers downwards and away from the body of the visiting bee, while the pistil remains in constant contact with its ventral side. At the moment of the bee's departure the hooks on the bee's feet by pulling on the connective fork raise the anthers of the long stamens, so as to bring the tips of the collected bunch into contact with its sides and abdomen. Dr. Müller's statement "by moving the connective fork of the larger ones" is somewhat ambiguous; for it is movement only in one direction that is of avail in *raising* the anthers of the larger stamens, pressure at the connective hook of course tends to depress the anthers and keep them apart from the bee's abdomen while a very slight backward pull at once raises the anther.

In various observations and discussions arising out of this letter, both Dr. Burck (the assistant director of the Botanical Gardens in Buitenzorg) and myself were able to observe a fact of considerable importance that there was, at any rate in those species examined by us, a great difference in the pollen of the two kinds of anthers. The pollen from the short stamens was large and three-cornered, while that of the longer ones was very much smaller and of a more oval shape; and while both forms were found on the pistil, only the pollen from the long stamens seemed to be fertile. We could not detect any of the short stamened pollen with tubes ejected. HENRY O. FORBES

Wai, Amboina, May

Habit of Spiders

I HAVE frequently observed that when a shock of any kind is imparted to the leaves or twigs, to which the web of the garden spider is affixed, the animal shakes violently in the centre of the web, so as to become almost or totally invisible to the eye; this quivering or dancing motion being kept up for many seconds, and then suddenly stopped. The same thing occurs, I have noticed, when a stick is presented suddenly to the occupant of the web. The reason for these movements, which appear to be effected by the spider in succession pulling the upper portion of the web downwards by means of his strong hindermost pair of legs, and then suddenly releasing it (the natural elasticity of the web greatly assisting the occupier in the execution of these movements), seems to be founded upon a desire on the part of the spider to effect concealment when it feels that danger is near; just as we notice gnats and crane-flies dance rapidly up and down, evidently with the desire of rendering themselves invisible, whilst at rest on the window pane, trusting no doubt to their speedy flight and general invisibility for protection when on the wing. FRANK J. ROWBOTHAM

42, Loftus Road, Shepherds Bush, W., August 21

Messrs. McAlpine's Atlases

I DOUBT not but you will grant me the privilege of replying to the remarks made by Prof. Parker under the above heading in your last issue, and fortunately in doing so I will not require to trespass much upon your valuable space. The letter deals first with myself personally, then with the Atlases.

With regard to his reference to my student history, it may suffice to say that I had no connection with the Biological Laboratory at South Kensington *some three or four years ago.* I studied at the Royal School of Mines from 1872 to 1875, spending Session 1874-75 in the Biological Laboratory; but as to the alleged copying of diagrams of type dissections, how, I ask, was this possible when, as far as known to me, such drawings were not in existence.

Again, his statement as to my having presented myself for examination in the two following years, appearing each time a place or two lower in the second class is equally destitute of fact. I was re-examined in 1876 and 1878, but instead of appearing either higher or lower in the second class, I invariably stood at the bottom of it.

I need not dwell further upon a personal matter, and it will not be necessary, after the above explanation, to say much about the Atlases. The opinions expressed with regard to my work it is not for me to call in question, but will simply content myself with saying that it has been favourably commented on by journals—scientific and medical, at home and in the colonies—only one of which I quote. Prof. Parker speaks of my work as being "of the most inaccurate and slovenly description," while the *Canadian Journal of Medical Science* says: "The truthfulness, accuracy, and neatness which mark each of its pages compel us to speak in very high terms of this book."

Polwarth Gardens, Edinburgh, July 31 D. MCALPINE

ORANGE CULTURE IN FLORIDA.—A correspondent inquires for the best work on this subject; perhaps some of our readers may be able to answer.

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